

BAB VIII

PERHITUNGAN SLOOF S2

8.1 Perencanaan Sloof

- Beban momen lentur

$$L_s := 3.5 - 0.15 = 3.35 \text{ m}$$

$$\text{Dimensi sloof : } b := 150 \text{ mm}$$

$$h := 300 \text{ mm}$$

$$\text{Beban mati tembok } W_t := 250 \cdot 3.6 = 900 \text{ kg/m'}$$

$$\text{Berat sendiri sloof } W_s := 0.15 \cdot 0.30 \cdot 2400 = 108 \text{ kg/m'}$$

$$q_{tot} := W_t + W_s = 1008 \text{ kg/m'}$$

$$q_u := 1.2 \cdot q_{tot} = 1209.6 \text{ kg/m'}$$

Momen berfaktor M_u :

$$M_u := \frac{q_u \cdot L_s^2}{10 \cdot 100} = 13.575 \text{ kNm}$$

- Beban aksial (10% Pkolom)

$$P_{kolom} := 829.356 \text{ kN}$$

$$P_s := 0.1 \cdot P_{kolom} = 82.936 \text{ kN}$$

Direncanakan menggunakan :

tulangan utama 2 Φ 12 (two face) dan tulangan tengah 2 Φ 12

senggang Φ 8

$$\text{daksen} := 40 + 8 + 6 = 54 \text{ mm}$$

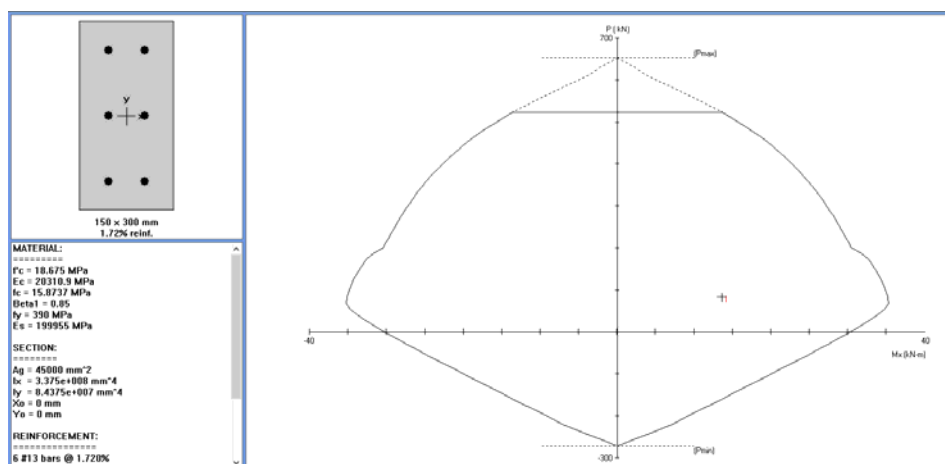
$$d := h - \text{daksen} = 246 \text{ mm}$$

$$f_y := 390 \text{ Mpa}$$

$$f_c := 18.675 \text{ Mpa}$$

$$E_s := 200000 \text{ Mpa}$$

Kontrol menggunakan PCA COL



- Tulangan Geser Sloof

$N_u := 82.936 \text{ kN}$ (Output ETABS)

kuat geser komponen struktur yang dibebani aksial tekan

$$A_g := 150 \cdot 300 = 45000 \text{ mm}^2$$

$$V_c := \left(1 + \frac{N_u \cdot 1000}{A_g} \right) \cdot \frac{\sqrt{f_c} \cdot b \cdot d}{6 \cdot 1000} = 75.559 \text{ kN} \quad (\text{SNI 03-2847-200 Ps. 13.3.1.2})$$

$$V_u := \frac{q_u \cdot L_s}{2 \cdot 100} = 20.261 \text{ kN}$$

$$V_s := \frac{V_u}{0.6} - V_c = -41.791 \text{ kN}$$

karena gaya geser beton mampu menahan gaya geser yang bekerja maka cukup dipasang tulangan geser $\Phi 8$ -150 pada daerah tumpuan & $\Phi 8$ -200 pada daerah lapangan.